

# **THE EFFECT OF ADDITION OF MODIFIED ASPHALT CONTENT SHELL (SINGAPORE) AT MARSHALL CHARACTERISTICS USING BANTAK LOCAL MATERIAL**

By:  
Dodi Wijayanto  
Nim. 09510134001

## **ABSTRACT**

This study aims to determine the effect of addition of modified asphalt content shell (Singapore) on the characteristics of dense asphalt concrete using Marshall test with Bantak local materials in terms of Marshall stability value, density, flow, VIM, VMA, VFB and *Marshall Quotient*.

This study uses a hot asphalt mixture testing (Hot Mix) by laboratory testing techniques that include testing of aggregates, asphalt testing, and testing of Marshall. This study consists of five variants; each variant is using different asphalt content as follows: 5%, 5.5%, 6%, 6.5% and 7%. With each variant sample is made of 3 pieces of sample. Implementation of the research conducted at the Laboratory of Civil Engineering Highways and Planning, Faculty of Engineering, State University of Yogyakarta. Phase of the investigation include modified asphalt shell (Singapore), examination Bantak aggregate (fine aggregate and coarse aggregate), examination of filler, manufacture of the specimen sample and testing of Marshall.

Based on research results obtained optimum asphalt content 6,75% with density value and VMA 2,335 gr/cc and 13,87%, value of VFB, and VIM 65,57, and 41%, for stability, flow and Marshall Quotient respectively are 1397,45 kg, 4,295 mm and 326,015 kg/mm.

**Key Words:** Bantak aggregate, Shell modification asphalt, Marshall

# **EFEK PENAMBAHAN KADAR ASPAL MODIFIKASI *SHELL* (SINGAPORE) TERHADAP KARAKTERISTIK MARSHALL MENGUNAKAN MATERIAL LOKAL BANTAK**

Oleh:  
Dodi Wijayanto  
NIM. 09510134001

## **ABSTRAK**

Penelitian ini bertujuan untuk mengetahui efek penambahan kadar aspal modifikasi *Shell* (Singapore) terhadap karakteristik campuran beton aspal padat dengan metode pengujian Marshall yang menggunakan material lokal bantak ditinjau dari nilai Stabilitas Marshall, Kepadatan (*Density*), *Flow* (kelelehan), VIM (*Void In Mix*), VMA (*Void In Mineral Agregat*), VFB (*Void Filled Bitumen*) dan *Marshall Quotient* (MQ).

Penelitian ini menggunakan metode pengujian campuran beraspal panas (*Hot Mix*) dengan teknik uji laboratorium yang meliputi pengujian terhadap agregat, pengujian aspal dan pengujian Marshall. Penelitian ini terdiri dari 5 jenis *varian*, masing-masing *varian* menggunakan kadar aspal yang berbeda yaitu: 5%; 5,5%; 6%; 6,5% dan 7%, dengan masing-masing *varian* dibuat 3 benda uji. Pelaksanaan penelitian dilakukan di Laboratorium Jalan Raya, Teknik Sipil dan Perencanaan, Fakultas Teknik, Universitas Negeri Yogyakarta. Tahapan pelaksanaan meliputi pemeriksaan aspal modifikasi *Shell* (Singapore), pemeriksaan agregat bantak (agregat halus dan agregat kasar), pemeriksaan *filler*, pembuatan benda uji campuran beton aspal dan pengujian benda uji menggunakan metode Marshall.

Berdasarkan hasil penelitian didapatkan kadar aspal optimum 6,75% dengan nilai kepadatan (*density*) dan VMA (*Void in Mineral Agregate*) 2,335 gr/cc dan 13,87%, nilai VFB (*Void Filled Bitumen*) dan VIM (*Void In Mix*) 65,57% dan 41%, nilai stabilitas, *flow* dan *Marshall Quotient* (MQ) berturut-turut sebesar 1397,45 kg; 4,295 mm dan 326,015 kg/mm.

**Kata Kunci:** Agregat Bantak, Aspal modifikasi *Shell*, Marshall